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1 [A performance comparison of contemporary DRAM architectures](#)



Vinodh Cuppu, Bruce Jacob, Brian Davis, Trevor Mudge

May 1999 **ACM SIGARCH Computer Architecture News , Proceedings of the 26th annual international symposium on Computer architecture ISCA '99**, Volume 27 Issue 2

Publisher: IEEE Computer Society, ACM Press

Full text available: pdf(166.88 KB)

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In response to the growing gap between memory access time and processor speed, DRAM manufacturers have created several new DRAM architectures. This paper presents a simulation-based performance study of a representative group, each evaluated in a small system organization. These small-system organizations correspond to workstation-class computers and use on the order of 10 DRAM chips. The study covers Fast Page Mode, Extended Data Out, Synchronous, Enhanced Synchronous, Synchronous Link, Rambus, ...

2 [System-level power optimization: techniques and tools](#)



Luca Benini, Giovanni de Micheli

April 2000 **ACM Transactions on Design Automation of Electronic Systems (TODAES)**, Volume 5 Issue 2

Publisher: ACM Press

Full text available: pdf(385.22 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This tutorial surveys design methods for energy-efficient system-level design. We consider electronic systems consisting of a hardware platform and software layers. We consider the three major constituents of hardware that consume energy, namely computation, communication, and storage units, and we review methods of reducing their energy consumption. We also study models for analyzing the energy cost of software, and methods for energy-efficient software design and compilation. This survey ...

3 [Power reduction techniques for microprocessor systems](#)



Vasanth Venkatachalam, Michael Franz

September 2005 **ACM Computing Surveys (CSUR)**, Volume 37 Issue 3

Publisher: ACM Press

Full text available: pdf(602.33 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Power consumption is a major factor that limits the performance of computers. We survey

the "state of the art" in techniques that reduce the total power consumed by a microprocessor system over time. These techniques are applied at various levels ranging from circuits to architectures, architectures to system software, and system software to applications. They also include holistic approaches that will become more important over the next decade. We conclude that power management is a ...

Keywords: Energy dissipation, power reduction

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S2	60	(Eric near2 Stubbs).in.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/07/09 08:11
S3	162	(Gordon near2 Roberts).in.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/07/09 08:11
S4	34	S2 and S3	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/07/09 08:13
S5	121535	semiconductor near2 chip	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/07/09 08:13
S6	228220	(monitor\$4 or detect\$4) near2 (presen\$4 or available)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/07/09 08:15
S7	61478	open adj2 circuit	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/07/09 08:15
S8	115768	DRAM	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/07/09 08:15
S9	8474	data near2 refresh\$4	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/07/09 08:15

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S10	1611	CAS near2 latency	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/07/09 08:16
S11	1613	S5 and S6	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/07/09 08:16
S12	42	S11 and S9	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/07/09 08:16
S13	0	S12 and S7	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/07/09 08:17
S14	32	S12 and S8	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/07/09 08:17
S15	0	S14 and S10	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/07/09 08:17
S16	29798	"711"/\$.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/07/09 08:17
S17	72884	"365"/\$.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/07/09 08:17
S18	2287	S16 and S17	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/07/09 08:18
S19	5	S14 and S18	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/07/09 08:18

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S20	3	S1 and S19	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/07/09 08:18
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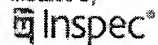
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